

REMARKS

Claims 1, 3-5, 39-42 and 44 remain in the application. Reconsideration of the application in view of the amendments and the remarks to follow is requested.

Claims 1, 3-5, 39-42 and 44-48 stand rejected under 35 USC §112, first paragraph, as containing subject matter allegedly not described in the specification. Particularly, the Examiner states the following recitation of claim 1 is not described: wherein the injecting the gas into the degassified liquid increases the total dissolved gas concentration in the liquid to from about 450 ppb to about 550 ppb. The Examiner states the specification describes the concentration of the *second* gas as between 450-550 ppb, but not the *total* gas concentration as being that amount (pg. 2 of paper no. 24). The Examiner is mistaken.

The originally-filed application teaches:

A method for determining total dissolved gas in water is to measure the concentration of dissolved oxygen. As discussed in the Background section of this disclosure, degassification procedures are generally not selective for particular dissolved gasses and lower all dissolved gasses in a liquid. A dissolved oxygen concentration can be particularly conveniently measured by methods known to persons of ordinary skill in the art. It is therefore expedient to quantitate a dissolved oxygen concentration and to use this as an indicator of a total dissolved gas concentration in a source of water. It has been found experimentally that if the dissolved oxygen concentration in a source of water is above about 150 parts per billion (ppb), preferably above about 190 ppb, and more preferably above about 200 ppb, slip-out of wafers can be avoided. However, when the dissolved oxygen concentration falls to below 150 ppb slip-out becomes unacceptably frequent. Often,

slip-out becomes unacceptably frequent if the dissolved oxygen concentration falls to below 200 ppb. Currently utilized degassification procedures will reduce dissolved oxygen concentrations to about 4 ppb, which is too low for many polishing processes. Accordingly, it is desirable to regassify water prior to utilization in polishing processes.

The gas provided in a liquid during a regassification procedure can have a composition different from the gas removed from the liquid during a degassification procedure. The gas removed from the liquid during the degassification process is a first gas which will generally have a composition similar to that of the atmosphere. The gas provided back into the liquid during a regassification is a second gas which is preferably a relatively cheap and non-reactive gas, such as argon or nitrogen. The second gas is preferably provided to a concentration of at least 200 ppb, preferably of from about 450 ppb to about 550 ppb, and more preferably of at least about 500 ppb. Such concentration of second gas has been found experimentally to convert a degassified liquid having 4 ppb of dissolved oxygen to a liquid which will significantly reduce slip-out of wafers.

(pgs. 6-7 of the originally-filed application) (emphasis added). That is, the originally-filed application teaches dissolved oxygen concentration is used as an indicator of a total dissolved gas concentration in a source of water. Moreover, currently utilized degassification procedures will reduce dissolved oxygen concentrations to about 4 ppb, that is, an indication of total dissolved gas concentration of about 4 ppb. A second gas is provided to a concentration of at least 200 ppb, preferably of from about 450 ppb to about 550 ppb to this total dissolved gas concentration of about 4 ppb. That is, 4 ppb of oxygen + 450 ppb to about 550 ppb of a second gas approximately equals a total dissolved gas concentration in the liquid of from about 450 ppb to about 550 ppb. Consequently, the originally-filed application describes injecting a gas into

the degassified liquid increases the total dissolved gas concentration in the liquid to from about 450 ppb to about 550 ppb as positively recited in claim 1. Therefore, the §112 rejection against claims 1, 3-5, 39-42 and 44-48 is inappropriate and should be withdrawn.

No other rejections are presented against claims 40-42, and therefore, such claims are allowable.

Claim 1 (and by virtue of dependency, claims 3-5, 39 and 44-48) stands rejected by Applicant's admitted prior art and Mitsumori (5,783,790). Claim 1 recites degassifying a liquid, and injecting a gas into the degassified liquid, the regassification forming the polishing process liquid and increases the total dissolved gas concentration in the liquid to from about 450 ppb to about 550 ppb. The Examiner correctly states that Applicant's admitted prior art does not teach regassifying the liquid, and relies on Mitsumori to teach such recited limitation (pg. 3 fo paper no. 24). However, Mitsumori teaches that after cleaning surfactant from a substrate surface, ozone can be provided in water so that "residual surfactant remaining on the substrate surface after the cleansing operation using electrolytically ionized water containing a surfactant can be completely removed by treating the surface with water containing an oxidant such as ozone" (col. 9, Ins. 44-62). That is, the ozone is provided in the water to be used as a cleansing agent, not a polishing process liquid as positively recited in claim 1. In no fair or reasonable interpretation does Mitsumori teach or suggest regassification forming the polishing process liquid as positively recited in claim 1. Therefore, Applicant's admitted prior art and Mitsumori, singularly or

in any combination, fail to teach or suggest a positively recited limitation of claim

1. Claim 1 is allowable.

Moreover, in rejecting claim 1, the Examiner impermissibly relies on Applicant's disclosure stating Applicant's admitted prior art teaches that "semiconductor fabrication processes ... utilize[] degassification procedures [to] degas to a level of 4 ppb of oxygen", and then states that Applicant's admitted prior does not teach regasifying the liquid and relies on Mitsumori to teach such recited limitation (pg. 3 fo paper no. 24). However, the Examiner is mistaken as to the teaching of Applicant's admitted prior, and therefore the obviousness rejection fails.

Under the heading "Detailed Description of the Preferred Embodiments", Applicant teaches, "[c]urrently utilized degassification procedures will reduce dissolved oxygen concentrations to about 4 ppb, which is too low for many polishing processes" (pg. 7, Ins. 2-4 of the originally-filed application). This statement is not presented in the "Background" section, and it not stated to be a prior art teaching. In no fair or reasonable interpretation can this teaching by the Applicant be stated to be prior art, and can only be stated to be a teaching by the Applicant. Consequently, the Examiner is relying on the Applicant's disclosure for teachings to provide an obviousness rejection, contrary to Federal Circuit law and the MPEP.

The Federal Circuit stated it most succinctly, "[t]o imbue one of ordinary skill in the art with knowledge of the invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall

victim to the insidious effect of a hindsight syndrome ~~wh r in that which only the inv ntor taught is used against th teacher.~~" *W. L. Gore & Associates, Inc. v Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 312-13 (Fed. Cir. 1983) (emphasis added). The Examiner presents no reference or references of record to teach the recited combination of limitations of claim 1 without relying on teachings of Applicant's disclosure. Pursuant to the Federal Circuit authority above, such reliance is improper, and therefore, the obviousness rejection against claim 1 must fail and should be withdrawn.

The M.P.E.P. defines the problem clearly at §2142 (8th ed):

To reach a proper determination under 35 U.S.C. §103, the Examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made. In view of all the factual information, the Examiner must then make a determination whether the claimed invention 'as a whole' would have been obvious at that time to that person. Knowledge of Applicant's disclosure must be put aside in reaching this determination.... The tendency to resort to 'hindsight' based upon the Applicant's disclosure is often difficult to avoid do to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

M.P.E.P. §2143 (8th Ed.) (emphasis added). No reasonable or fair argument can be made that the Examiner has not relied on the knowledge of Applicant's disclosure. Consequently, the Examiner has impermissibly used hindsight to reconstruct Applicant's invention recited in claim 1, and therefore, the obviousness rejection is inappropriate and must be withdrawn.

Claims 3-5, 39-42 and 44-48 depend from independent claim 1, and therefore, are allowable for the reasons discussed above with respect to the

independent claim, as well as for their own recited features which are not shown or taught by the art of record.

For example, claim 39 recites removing a first gas from a liquid and adding a second gas, the first gas and the second gas having different compositions. Applicant's admitted prior art and Mitsumori fail to teach or suggest a composition of a first gas, and therefore, no stated relationship is taught by the combination of art regarding the first and second gases. Accordingly, it is inconceivable that Applicant's admitted prior art and Mitsumori could teach or suggest the first gas and the second gas **having different compositions** as positively recited by claim 39. Consequently, claim 39 is allowable.

Claim 41 recites a second gas composition comprises nitrogen and/or argon. The Examiner correctly states Applicant's admitted prior art does not teach injecting a gas into the liquid, and Mitsumori teaches ozone is provided in water to be used as a cleansing agent (col. 9, Ins. 44-62). Accordingly, it is inconceivable that Applicant's admitted prior art and Mitsumori could teach or suggest a second gas composition **comprises nitrogen and/or argon** as positively recited by claim 41. Consequently, claim 41 is allowable.

Claim 42 recites an injected gas does not include oxygen. The Examiner correctly states Applicant's admitted prior art does not teach injecting a gas into the liquid, and Mitsumori teaches ozone is provided in water to be used as a cleansing agent (col. 9, Ins. 44-62). Accordingly, it is inconceivable that Applicant's admitted prior art and Mitsumori could teach or suggest an injected

gas do s not includ oxyg n as positively recited by claim 42. Consequently, claim 42 is allowable.

Claim 47 recites injecting a gas through a sintered filter. Applicant's admitted prior art does not teach a sintered filter and an electronic search of Mitsumori verifies that such reference does not teach such recited limitation. Accordingly, it is inconceivable that Applicant's admitted prior art and Mitsumori could teach or suggest injecting the gas **through a sintered filter** as positively recited by claim 47. Consequently, claim 47 is allowable.

Claim 48 recites a degassification and a regassification comprise a common processing step. The Examiner relies on Applicant's admitted prior art to teach degassification and Mitsumori to teach regassification, and therefore, it is inconceivable that such combination could teach or suggest each separately taught limitation are in **a common processing step** as positively recited by claim 48. Consequently, claim 48 is allowable.

This application is now believed to be in immediate condition for allowance, and action to that end is respectfully requested. If the Examiner's next anticipated action is to be anything other than a Notice of Allowance, the undersigned respectfully requests a telephone interview prior to issuance of any such subsequent action.

Respectfully submitted,

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